SHARP

SHARP COMPET

ELSI MATE

ELECTRONIC CALCULATOR

EL-5804

INSTRUCTION MANUAL

NOTE:
Push in the key slightly while sliding the power switch from OFF to DEG or GRAD position, otherwise the key will not move.

LIMITED WARRANTY

SHARP ELECTRONICS CORPORATION warrants its Calculator products to the original purchaser to be free from defective materials and workmanship, and agrees to repair any such defect or to furnish a new or equal part in exchange, except batteries, through an authorized Sharp Factory Service Center.

This warranty does not apply to any appearance items nor to any product whose exterior has been damaged or defected, nor to any product subjected to misuse, abnormal service or handling, nor to any product altered or repaired by other than an authorized Sharp Factory Service Center . This warranty does not apply to any product purchased outside the United States, its territories or possessions.

The period of this warranty covers one (1) year on parts and one (1) year on labor from date of purchase, except the solar cell contained on the solar calculator, which cell is warranted for three (3) years from date of original purchase.

This warranty entitles the original purchaser to have the warranteed parts and labor rendered at no cost for the period of the warranty described above when the calculator is carried or shipped into an authorized Sharp Factory Service Center together with proof of purchase.

This shall be the exclusive written warranty of the original purchaser and neither this warranty nor any other warranty expressed or implied shall extend beyond the period of time listed above. In no event shall Sharp be liable for consequential economic damage or consquential damage to property. Some states do not allow a limitation on how long an implied warranty lasts or an exclusion of consequential damage, so the above limitation and exclusion may not apply to you. In addition, this warranty gives specific legal rights, and you may have other rights which vary from state to state.

INTERNATIONAL WARRANTY SYSTEM

Within the period of one (1) year from the date of purchase, warranty repair service may be obtained for any Sharp battery-operated consumer calculator at any of the service centers listed below.
An International Warranty Cetrificate must be presented with the calculator.

Australia, Hong Kong, Iran, Japan, Kuwait, Lebanon,
Malaysia, Panama, Philippines, Singapore, South Africa,
Thailand, United Kingdom, U.S.A., West Germany

The International Warranty Certificate is not required for warranty repair within the continental United States. However, if you plan to travel abroad, an International Warranty Certificate may be obtained free of charge by sending your dated proof of purchase listing the model and serial number of your calculator to Sharp Electronics Corporation, 10 Keystone place, Paramus, New Jersey 07652. Attn: National Service Manager. Your proof of purchase will be returned to you along with your International Warranty Certificate. Please allow three (3) weeks for processing.

INTRODUCTION

Thank you for your purchase of the SHARP ELSI MATE EL5804. Though small in size, this unit is capable of performing complex calculations with amazing speed and simplicity.
Careful reading of this manual will enable you to use your new SHARP to it's full capability.

OPERATIONAL NOTES

To insure trouble free operation of your SHARP Calculator, we recommend the following:

1. The calculator should be kept in areas free from extreme temperature fluctuations, moisture, and dust.
2. A soft, dry cloth should be used to clean the calculator.
   Do not use solvents or a wet cloth.
3. If service of your calculator is required, use only an authorized SHARP Service Center.
4. The temperature changes may effect the rate at which the machine is ready for operation (this is due to the nature of the Liquid Crystal and is not a defect in the machine).
   If the machine is stored in a cool area, the machine will be ready for use within 10 seconds after the power switch has been slided into "ON". If the machine is stored below 0°C (32°F), it is recommended that the machine be "warmed-up" in normal room temperature before operation.
5. Do not put your EL-5804 in the back pocket of your trousers as it may be damaged by a strong force or jolt when you sit down.

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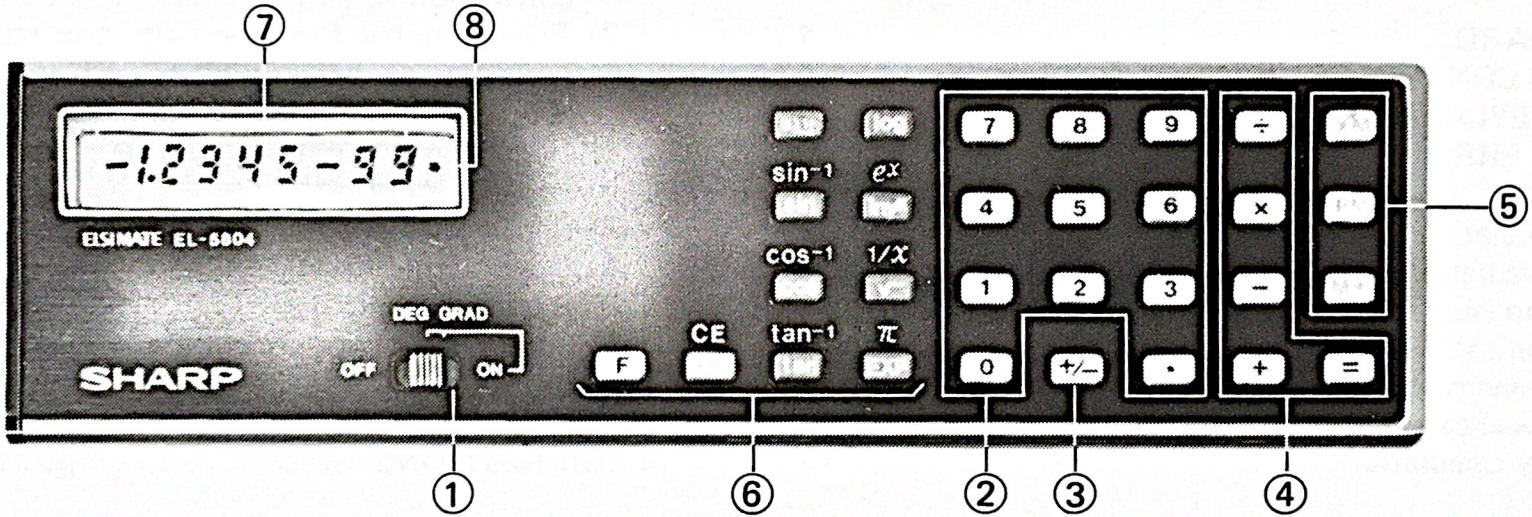
THE KEYBOARD



1. Power switch and Degree/Grad selector
2. Numeral keys
3. Change sign key
4. 4 arithmetic calculation keys
5. Memory keys
6. [F] 2nd function designation key

   [CE/C] Clear and clear entry key

   [°'"] Degree/minute/second → Decimal degrees conversion key

   [sin⁻¹/sin] [cos⁻¹/cos] [tan⁻¹/tan] Trigonometric and inverse trigonometric keys

   [log] Common logarithm key

   [e^x/ln] Natural logarithm/y^x and anti-logarithm key

   [1/x/√] Square root and reciprocal key

   [π/EXP] Enter exponent and pi key

7. Display
8. Battery indicator

OPERATING CONTROLS

DEG GRAD
OFF ON

Power switch and Degree/Grad selector

"ON" position The calculator is automatically cleared and ready for operation.

"OFF" position The calculator is turned-off.

"DEG" position Entries and answers are in decimal degree.

"GRAD" position Entries and answers are in grad. (A new degree system which is being used in Europe. $100^g = 90^\circ = \pi/2$).

−1.2345 − 99 • Display

All entries or answer will be displayed in either floating decimales or scientific notation. (See page 11) When operating in scientific notation, the minus sign will be displayed to the left of the negative portion of the number (i.e.: mantissa or exponent).

- Battery indicator
  To check the battery level, look straight down at the battery indicator ⌜•⌟ on the right hand side of the display.
  1) When the battery indicator is lit, power is being supplied to the calculator.
  2) When the battery indicator is not lit, the batteries should be replaced with new ones.

[0] ~ [9], [•] — Numeral keys
Used to enter number.

[+/−] Change sign key:
Changes the sign of the displayed number from a positive to a negative or from a negative to a positive.

[+] • [−] • [×] • [÷] Arithmetic calculation keys
Depress these keys according to mathematical formula in addition, subtraction, multiplication and division.

[=] Equals key
Completes the arithmetic function of +, −, x and ÷, and y^x

[x→M] Memory-in key:
Clears the number in the memory and then stores the displayed number in the memory.
To clear the memory depress the [C] key followed by the [x→M] key.

[RM] Recall memory key:
Displays the contents of the memory. The contents of the memory remain unchanged.

[M+] Memory plus key
Adds the number in the display to the memory.
To subtract a displayed number from the memory, use the [+/−] key before depressing the [M+] key.

[F] 2nd function designation key
This key is depressed when designating the second function (labeled in orange) of the special function keys. (i.e. $1/x$, e^x, $\sin^{-1}$ etc.)

CE / C — Clear and clear entry key

- Clears the contents of the calculation registers. The contents of the memory is not affected.
- If depressed after the F key, clears an incorrectly entered number.

°'" — Degree/minute/second → Decimal degrees conversion key

Converts degrees/minute/seconds to their decimal equivalents.

sin⁻¹ / sin, cos⁻¹ / cos, tan⁻¹ / tan — Trigonometric and inverse trigonometric keys

- Used to obtain the sine, cosine or tangent of a displayed number.
- If depressed following the F key, the inverse trigonometric functions are calculated.

log — Common logarithm key

Used to obtain a logarithm with the base of 10.

e^x / ln·y^x — Natural logarithm/y^x and antilogarithm key

- Used to obtain a logarithm with the base of e (e ≒ 2.7182818) and raises a number to a power.

Ex. ln A ⟶ A ln·y^x

B^C ⟶ B ln·y^x C =

- If depressed following the F key, calculates the antilog base e of the displayed number.

$1/x$ / $\sqrt{\ }$ — Square root and reciprocal key

- Used to obtain the square root of the displayed number.
- If depressed after the F key, calculates the reciprocal of the displayed number.

π (EXP) Enter exponent and pi key

- Used to enter the exponent of a number when working in scientific notation.

  2.3×10^{12} ⟶ 2.3 [EXP] 12

  2.3×10^{-6} ⟶ 2.3 [EXP] 6 [+/−]

- If depressed after the [F] key, the constant π (≒ 3.1415926) is entered.

BATTERY REPLACEMENT

When looking straight down at the display and the battery indicator ⌜•⌟ is turned off, replace the batteries with new ones*.

1) Turn off the power switch.
2) Remove two screws from the battery cover with screw driver (See fig. 1)

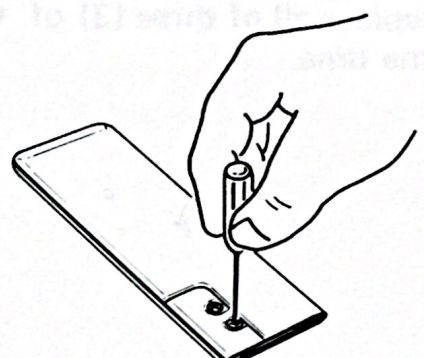


Fig.1

3) Remove the battery cover.
4) Replace the used batteries with new ones.
   Note: • Wipe off the surface of the new batteries with dry cloth and then, install the batteries as shown in fig. 2.
   • Always replace all of three (3) of the batteries at the same time.

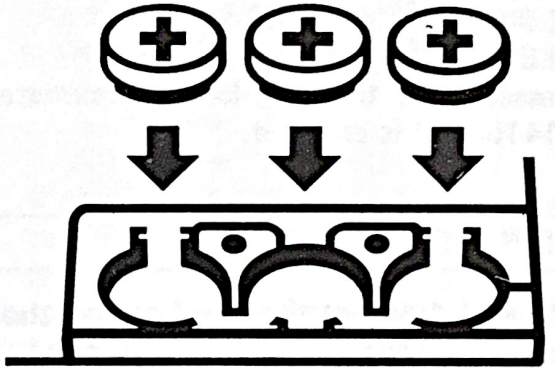


Fig.2

5) Replace the battery cover.
6) Push the battery cover in slightly while replacing the two screws.

*: Battery:
When you need your batteries replaced with new ones, you may be able to get them through jewelry stores dealing with digital watches, because your batteries are often used in them.
If you can not get them through jewelry stores, please contact your SHARP service center.
Please note that only
Union Carbide model 386,
Mallory model 10L124 and Ray-O-Vac model RW44
or equivalent should be used.

OVERFLOW ERRORS

There are several situations which will cause an overflow or an error condition. When this occurs, all of the zeros and decimal points in mantissa portion (0.0.0.0.0.0.0.0.0.) will be displayed. The [C] key must be used to reset the error condition.

Note: The contents of the memory at the time of the error is retained.

The following will cause an overflow and errors.

1. The absolute value of a calculation result is greater than 9.99999×10^{99} or smaller than 1×10^{-99} (except 0);
2. When a number is divided by 0 (zero, $A \div 0$);
3. For functional calculations an overflow or error occurs under the following error conditions; (See page 10)

functions	condition of error
$\sin x$ $\cos x$	DEG: $\|x\| > 572957.81$ $\quad 0 < \|x\| < 1 \times 10^{-97}$ GRAD: $\|x\| > 636619.78$ $\quad 0 < \|x\| < 1 \times 10^{-97}$
$\tan x$	(n: 0 ~ 10) DEG: $x = 90 \pm 180n$ and the vicinity, $0 < \|x\| < 1 \times 10^{-97}$, $\|x\| > 572957.81$ GRAD: $x = 100 \pm 200n$ and the vicinity, $0 < \|x\| < 1 \times 10^{-97}$, $\|x\| > 636619.78$
$\sin^{-1} x$ $\cos^{-1} x$	$\|x\| > 1$ $0 < \|x\| < 1 \times 10^{-49}$
e^x	$x \geqq 230.25851$ $x \leqq -227.95593$
y^x	$y \leqq 0$, $x \cdot \ln y \geqq 230.25851$ $x \cdot \ln y \leqq -227.95593$
$\ln x$ $\log x$	$x \leqq 0$
$\sqrt{x}$	$x < 0$
$1/x$	$x = 0$

OPERATION

Before operation

- Entering numbers
  Entries may contain a maximum of 8 digits (7 decimals).
  Additional digits entered will be ignored.

Example:	Enter	Display
	123456789.	12345678.
	1.23456789	1.2345678

When entering numbers using scientific notation:

1. The mantissa may contain a maximum of 5 digits. If more than 5 digits are entered, use of the [EXP] key will be ignored.

Example:	Enter	Display
	12345 [EXP] 67	12345. 67
	123456 [EXP] 78	12345678.

2. The exponent portion of the entry may contain 2 digits. If more than 2 digits are entered, only the last 2 digits entered will be accepted.

Example:	Enter	Display
	5 [EXP] 123	5. 23

- Reading answers
  All answers exceeding 8 integers or with an absolute value smaller than .01 (example 0.0099999) will automatically be converted into scientific notation and will be displayed with a 6 digit (5 digits if negative) mantissa and a 2 digit exponent.
- In the calculation examples shown below, the operation of function keys are represented as follows:

π (EXP)

(1) π (EXP) ⟶ [EXP] (First function)

(2) [F] π (EXP) ⟶ [F] [π] (Second function)

$1/x$ ($\sqrt{\ }$)

(1) $1/x$ ($\sqrt{\ }$) ⟶ [$\sqrt{\ }$] (First function)

(2) [F] $1/x$ ($\sqrt{\ }$) ⟶ [F] [$1/x$] (Second function)

- To obtain an accurate result, be sure to perform the following operation before starting calculations.

		(display)
Power switch "ON"	⟶	0.
11111111 [×] [=]	⟶	1.23456 14

Normal calculation

1) Addition (Subtraction) & Multiplication (Division)

Ex.1 123 – 45.6 + 789 =

Operation	Display	Note
123 [−] 45.6 [+] 789 [=]	866.4	Ans.

Ex.2 56789 x (–246) ÷ 0.12 =

Operation	Display	Note
56789 [×]	56789.	
246 [+/−] [÷]	–13970094.	56789 x (–246)
.12 [=]	–1.164108	Ans.

- When entering a negative number, operate as follows;
  Numeral keys [+/−]

Ex. 3 $(2.3 \times 10^5 + 6.76 \times 10^6) \div (1.25 \times 10^{-12}) =$

Operation	Display	Note
2.3 [EXP] 5 [+] 6.76 [EXP] 6 [÷] 1.25 [EXP] 12 [+/−] [=]	6990000. 5.59200 18	$2.3 \times 10^5 + 6.76 \times 10^6$ Ans.

2) Constant Calculation

Ex. 1 Addition by constant $273 + \underline{572} = ①$
Constant: Addend $768 + \underline{572} = ②$

Operation	Display	Note
273 [+] 572 [=]	845.	①
768 [=]	1340.	②

Ex. 2 Subtraction by constant $597 - \underline{184} = ①$
Constant: Subtrahend $323 - \underline{184} = ②$

Operation	Display	Note
597 [−] 184 [=]	413.	①
323 [=]	139.	②

Ex. 3 Multiplication by constant $\underline{3} \times 5 =$ ①
Constant: Multiplicand $\underline{3} \times 10 =$ ②
$\underline{3} \times (-15) =$ ③

Operation	Display	Note
3 [×] 5 [=]	15.	①
10 [=]	30.	②
15 [+/−] [=]	−45.	③

Ex. 4 Division by constant
Constant: Divisor

$15 \div \underline{3} =$ ①
$30 \div \underline{3} =$ ②
$(-45) \div \underline{3} =$ ③

Operation	Display	Note
15 [÷] 3 [=]	5.	①
30 [=]	10.	②
45 [+/−] [=]	−15.	③

3) Square and power calculation

Ex. $((4^3)^2)^2 = 4^{12}$ = ①, 876.4^2 = ②

Operation	Display	Note
4 [×] [=] [=]	64.	4^3
[×] [=]	4096.	64^2 (4^6)
[×] [=]	16777216.	① 4096^2 (4^{12})
876.4 [×] [=]	768076.96	②

4) Reciprocal calculation

Ex. $\frac{1}{5}$ = ① $\frac{1}{27 \times 8}$ = ②

Operation	Display	Note
5 [÷] [=] [=]	0.2	①
27 [×] 8 [÷] [=] [=]	4.62962 – 03	②

5) Memory Calculation

- Depress the [C] and [xM] keys to clear the memory before starting a memory calculation.
- If the [C] [xM] keys are not depressed prior to calculation, a previously stored number can be cleared from the memory when a new number is stored in the memory by depression of the [xM] key.
- When subtracting a number from the memory, depress the [+/−] and [M+] keys in this order.

Ex. 1

$$\begin{array}{rll} & 46 + 78 = & ① \\ +) & 125 - 59 = & ② \\ -) & 72 + 86 = & ③ \\ \hline & \text{Total} & ④ \end{array}$$

Operation	Display	Note
[C] [xM] 46 [+] 78 [=] [M+]	124.	①
125 [−] 59 [=] [M+]	66.	②
72 [+] 86 [=] [+/−] [M+]	−158.	③
[RM]	32.	④

Ex. 2 (87,654 + 42,753) x (100,000 – 20,453) =

Operation	Display	Note
87654 [x̄M] 42753 [M+]	42753.	
1 [EXP] 5 [–] 20453 [×]	79547.	
[RM] [=]	1.03734 10	Ans.

Ex. 3

572 x 62 = ①
+) 896 ÷ 5 = ②
–) 346 x 32 = ③
Total ④

Operation	Display	Note
572 [×] 62 [=] [x̄M]	35464.	①
896 [÷] 5 [=] [M+]	179.2	②
346 [×] 32 [=] [+/–] [M+]	–11072.	③
[RM]	24571.2	④

Functional Calculations

- The functions of $\sqrt{\ }$, π and $1/x$ can be calculated consecutively.
- The accuracy of functions are described in "SPECIFICATIONS".

1) Degree/Minute/Second ⟶ Decimal deg. conversion ([°'"])
   Ex. 1 $24^\circ 45' 54''$ =
   Ex. 2 $72^\circ 43''$ =

Operation	Display	Note
24 [°'"] 45 [°'"] 54 [°'"]	24.765	24.765°
72 [°'"] 0 [°'"] 43 [°'"]	72.011944	72.011944.....°

- If the [°'"] key is depressed after entry of second, it is converted as new degree/minute/second.

2) Trigonometric function (sin, cos, tan)

Ex. 1 $\sin 68^\circ$ = ①
Ex. 2 $\cos 47^\circ 34'$ = ②
Ex. 3 $\tan 150^g$ = ③
Ex. 4 1/2 x 73 x 126 x $\sin 48^\circ$ = ④

Operation	Display	Note
DEG 68 [sin]	0.9271838	①
DEG 47 [°'"] 34 [°'"] [cos]	0.6747319	②
GRAD 150 [tan]	−1.	③
DEG 48 [sin] [×] 2 [F] [1/x] [×] 73 [×] 126 [=]	0.5 3417.7229	④

3) Inverse trigonometric function ($\sin^{-1}$, $\cos^{-1}$, $\tan^{-1}$)

A calculation result of inverse trigonometric function can be obtained in the following ranges;

$\theta = \sin^{-1}x$, $\tan^{-1}x$
DEG: $-90 \leqq \theta \leqq 90$
GRAD: $-100 \leqq \theta \leqq 100$

$\theta = \cos^{-1}x$
DEG: $0 \leqq \theta \leqq 180$
GRAD: $0 \leqq \theta \leqq 200$

Ex. 1 $\sin^{-1}$ 0.5 = ①
Ex. 2 $\cos^{-1}$ 0.43 = ②
Ex. 3 $\tan^{-1}$ 1 = ③

Ex. 4 $\tan^{-1} \dfrac{23 \times \sin 72^\circ}{14 + 23 \times \cos 72^\circ} =$ ④

Operation	Display	Note
DEG .5 [F] [$\sin^{-1}$]	30.	①
GRAD .43 [F] [$\cos^{-1}$]	71.70271	②
DEG 1 [F] [$\tan^{-1}$]	45.	③
DEG 72 [cos] [×] 23 [+] 14 [=] [$\overrightarrow{xM}$] 72 [sin] [×] 23 [÷] [RM] [=] [F] [$\tan^{-1}$]	21.107391 21.874301 46.0222	④

4) Logarithmic functions (log, ln)

Ex. 1 $\log 456 =$ ①

Ex. 2 $\log_4 256 = \dfrac{\log 256}{\log 4} =$ ②

Ex. 3 $\ln 12^4 = 4 \ln 12 =$ ③

Operation	Display	Note
456 [log]	2.658965	①
4 [log] [$\overline{x_M}$] 256 [log] [÷] [RM] [=]	4.	②
12 [ln·y^x] [×] 4 [=]	9.9396268	③

5) Power function (y^x)

Ex. 1 $(24 + 37)^{18.7}$ = ①

Ex. 2 $\sqrt[5]{29^3} = 29^{\frac{3}{5}} = (29^3)^{\frac{1}{5}}$ = ②

Ex. 3 $\frac{1}{24^8} = 24^{-8}$ = ③

Operation	Display	Note
24 [+] 37 [=] [ln·yˣ] 18.7 [=]	2.43034 33	①
29 [ln·yˣ] 3 [=]	24388.98	
[ln·yˣ] 5 [F] [1/x] [=]	7.541168	②
24 [ln·yˣ] 8 [+/−] [=]	9.08469−12	③

6) Common antilog or 10^x

Ex. 10^x where $x = 1.39794$

Operation	Display	Note
10 [ln·y^x] 1.39794 [=]	2.3025852 25.	Ans.

7) Exponential function (e^x)

Ex. 1 $e^{-\frac{3}{4}} =$ ①

Ex. 2 $e^{\frac{1}{3}\ln 45} =$ ②

Operation	Display	Note
3 [÷] 4 [=] [+/-] [F] [e^x]	0.4723666	①
45 [ln·y^x] [÷] 3 [=] [F] [e^x]	3.556893	②

8) Reciprocal calculation (1/x)

Ex. $\dfrac{1}{\frac{1}{45}+\frac{1}{30}}=$

Operation	Display	Note
45 [F] [1/x] [+] 30 [F] [1/x] [=] [F] [1/x]	0.0555555 18.000018	$\frac{1}{45}+\frac{1}{30}$ Ans.

9) Square root extraction (√)

Ex. 1 $\sqrt{75 + 91} \times \sqrt{24} =$ ①

Ex. 2 $2 \times \pi \times \sqrt{\frac{397}{980}} =$ ②

Operation	Display	Note
75 [+] 91 [=] [√]	12.884098	$\sqrt{75 + 91}$
[×] 24 [√] [=]	63.11893	①
397 [÷] 980 [=] [√]	0.6364762	
[×] 2 [×] [F] [π] [=]	3.9990978	②

Applications

Ex. 1 Obtain the surface area (s) and volume (V) of a sphere.

Radius (r) = 42 cm $(1 - \frac{21''}{32})$

Formula $S = 4\pi r^2$

$V = \frac{4}{3}\pi r^3$

Operation	Display	Note
42 [×] [=] [×] 4 [×] [F] [π] [=]	22167.077	(S)
42 [$\ln \cdot y^x$] 3 [=] [×] 4 [÷] 3	3.	
[×] [F] [π] [=]	310338.78	(V)

Ex. 2 Hyperbolic function

Formula:

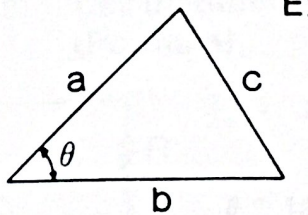
$$\sinh x = \frac{e^x - e^{-x}}{2}$$

$$\cosh x = \frac{e^x + e^{-x}}{2}$$

$$\tanh x = \frac{e^{2x} - 1}{e^{2x} + 1}$$

Ex. $x = 0.6$

Operation	Display	Note
.6 [F] [e^x] [$\overrightarrow{xM}$] [F] [1/x] [+/−] [M+] [RM] [÷] 2 [=]	0.6366537	sinh 0.6
.6 [F] [e^x] [$\overrightarrow{xM}$] [F] [1/x] [M+] [RM] [÷] 2 [=]	1.1854652	cosh 0.6
.6 [×] 2 [=] [F] [e^x] [$\overrightarrow{xM}$] [−] 1 [M+] [÷] [RM] [=]	0.5370495	tanh 0.6

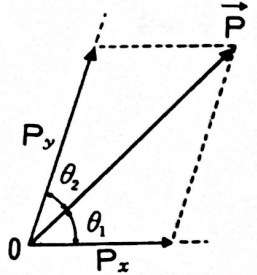


Ex. 3 Cosine theorem

Formula $C = \sqrt{a^2 + b^2 - 2ab\cos\theta}$

In the case of $a = 14.7\text{cm}$, $b = 17.8\text{cm}$ and $\theta = 43°32'54''$

Operation	Display	Note
DEG 14.7 [×] [=] [$\overrightarrow{xM}$]	216.09	
17.8 [×] [=] [M+] 43 [°'"]	43.	
32 [°'"] 54 [°'"] [cos]	0.7247935	
[×] 2 [×] 14.7 [×] 17.8	17.8	
[=] [+/−] [M+] [RM] [$\sqrt{\ }$]	12.3948	C Ans.



Ex. 4 Resolution of vector. $P = 22.5$ kg, $\theta_1 = 47°$, $\theta_2 = 24°$

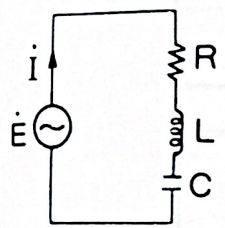
$Px =$ $Py =$

Formula: $$Px = \frac{P \times \sin \theta_2}{\sin(\theta_1 + \theta_2)} = \frac{22.5 \times \sin 24°}{\sin(47° + 24°)} \text{ (kg)}$$

$$Py = \frac{P \times \sin \theta_1}{\sin(\theta_1 + \theta_2)} = \frac{22.5 \times \sin 47°}{\sin(47° + 24°)} \text{ (kg)}$$

Operation	Display	Note
DEG 47 [+] 24 [=] [sin]	0.9455186	
[$\overrightarrow{xM}$] 24 [sin] [×] 22.5	22.5	
[÷] [RM] [=]	9.6788954	Px Ans.
47 [sin] [×] 22.5 [÷] [RM] [=]	17.403632	Py Ans.

Ex. 5 Calculation of impedance of AC circuit (Formula)



$$z = \sqrt{R^2 + (\omega L - \frac{1}{\omega C})^2}$$

$$\theta = \tan^{-1} \frac{\omega L - \frac{1}{\omega C}}{R}$$

Here, $\omega = 2\pi f$

Calculate impedance Z and phase angle θ of the AC circuit shown above. Here, R = 100 [Ω], L = 4 [H], C = 3 [μF], E = 100 [V] and f = 60 [Hz]

$$Z = \sqrt{100^2 + (2 \times \pi \times 60 \times 4 - \frac{1}{2 \times \pi \times 60 \times 3 \times 10^{-6}})^2} \quad [\Omega]$$

$$\theta = \tan^{-1} \frac{2 \times \pi \times 60 \times 4 - \frac{1}{2 \times \pi \times 60 \times 3 \times 10^{-6}}}{100}$$

(Key operation)

DEG 2 [×] [F] [π] [×] 60 [×] 4 [=] [xM] 3 [EXP] 6 [+/−] [=] [F]
→ [1/x] [+/−] [M+] [RM] [÷] 100 [=] [F] [tan⁻¹] → 80.8921 (θ)
[RM] [×] [=] [xM] 100 [×] [=] [M+] [RM] [√] → 631.73521 (Z)

CORRECTION OF ERRORS

Ex. 1 When 123 + 455 to 123 + 456;

Operation	Display	Note
123 [+] 455	455.	
[F] [CE]	0.	
456 [=]	579.	Ans. 123 + 456

If an incorrect number is entered, depress the [F] and [CE] key to clear the number only.

Ex. 2 When 7 x to 7 ÷ ;

Operation	Display	Note
7 [×]	7.	
[÷]	7.	
8 [=]	0.875	Ans.

- For the 4 arithmetic calculations keys ([+], [−], [×], [÷]), depress the correct key immediately after the incorrect key.

SPECIFICATIONS

Model: EL-5804

Display capacity: Floating decimal point display: 8 digits
Exponent display: Mantissa 6 digits (5 digits in negatives)
Exponent 2 digits

Calculation range:

- Four arithmetic calculations:
  1st operand, 2nd operand results: $1 \times 10^{-99} \sim 9.99999 \times 10^{99}$
  $-1 \times 10^{-99} \sim -9.9999 \times 10^{99}$
- Functional calculations:

Functions	Max. error	Calculation range	Remarks
$\sin x$ $\cos x$	±3 at the 7th digit	DEG: $\|x\| \leqq 720$ GRAD: $\|x\| \leqq 800$	When the value of x is out of the range of left calculation, the accuracy is low.
$\tan x$	±3 at the 7th digit	DEG: $\|x\| \leqq 360$ GRAD: $\|x\| \leqq 400$	

Functions	Max. error	Calculation range	Remarks
$\sin^{-1}x$ $\cos^{-1}x$	±3 at the 7th digit	$1 \times 10^{-49} \leqq \|x\| \leqq 1$	When the value of x is in the vicinity of 0 or ±1, the accuracy is low.
$\tan^{-1}x$	±2 at the 7th digit	All area that the entry is available	When the value of x is in the vicinity of 0 and $x > 1000$ the accuracy is low.
$\ln x$	±2 at the 7th digit	$x > 0$	When the value of x is in the vicinity of 1, the accuracy is low.
$\log x$	±3 at the 7th digit		
e^x	±5 at the 7th digit	$-227.95593 < x < 230.25851$	When the value of x is in the vicinity of 0, the accuracy is low.

Functions	Max. error	Calculation range	Remarks
y^x	±5 at the 6th digit	$y \geqq 1.1$	When the value of y is in the vicinity of 1, the accuracy is low.
$1/x$	———	All area that the entry is available (except 0)	
$\sqrt{x}$	———	$x \geqq 0$	

For these function the accuracy is lowered around the singular point and point of inflection.

Decimal point: Floating decimal point system or scientific notation

Sign: Minus sign appears for mantissa and exponent.

Calculations: Four arithmetic calculations, constant calculation, square calculation, power calculation, memory calculation, trigonometric function, inverse trigonometric

	function, exponential function, logarithmic function, y to the x power calculation, degree/minute/second ⟶ decimals degree conversion, reciprocal calculation, square root calculation.
Components:	LSI etc.
Display:	Liquid crystal (FEM type)
Power supply:	D.C.: 4.5V, silver-oxide battery x 3(WS-10)(See page on "BATTERY REPLACEMENT")
Operating time:	Silver-oxide battery: Approx. 750 hours in the case of continuous operation. (Display: 5555, ambient temperature: 20°C. (68°F)) The operating time slightly varies depending upon the use or type of battery.
Operating temperature:	0°C ~ 40°C (32°F ~ 104°F)
Power consumption:	D.C.: 4.5V, 0.001W
Dimensions:	179(W) x 46(D) x 7(H) mm 7-1/32"(W) x 1-13/16"(D) x 9/32"(H)
Weight:	70g (0.15 lbs.)
Accessories:	Carring case, silver-oxide battery x 3 pcs. (Built-in)

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